

What Is Claimed Is:

1. A pointing device comprising:
 - a light emitting means for illuminating a subject selected from the group consisting of a surface of a finger, a lattice, and any perceivable pattern;
 - 5 a hole through which light from the light emitting means is transmitted;
 - an image-acquisition area for taking an image of the subject from the transmitted light;
 - an image-formation means for forming an image by focusing the light reflected from the image-acquisition area;
 - 10 a conversion means for converting the image formed by the image-formation means into an electric signal; and
 - an operation means for detecting the change of the image and calculating the amount of the change using the electric signal output from the conversion means.
- 15 2. A pointing device comprising:
 - a light emitting means;
 - a light guide structure for guiding light from the light emitting means to a subject selected from the group consisting of a surface of a finger, a
 - 20 lattice, and any perceivable pattern;
 - an image-acquisition area for taking an image of the subject from the guided light;
 - an image-formation means for forming an image by focusing the light reflected from the image-acquisition area;
 - 25 a conversion means for converting the image formed by the image-formation

means into an electric signal; and
an operation means for detecting the change of the image and calculating the
amount of the change using the electric signal output from the conversion
means.

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3. The pointing device as defined by claim 1 or claim 2, wherein the light
emitting means is selected from the group consisting of a light emitting
diode, a laser diode, and an organic electroluminescence.

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4. The pointing device as defined by claim 3, wherein the light emitting
means comprises at least one light emitting diode.

5. The pointing device as defined by claim 1 or claim 2, wherein the
conversion means is a CMOS image sensor or a CCD image sensor.

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6. The pointing device as defined by claim 1 or claim 2, further comprising a
selection button for selecting a target with a pointer moved by the pointing
device or entering a command.

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7. The pointing device as defined by claim 1 or 2, wherein the image-
formation means is one selected from the group consisting of a spherical
or non-spherical lens and a spherical or non-spherical mirror.

8. A pointing device comprising:
a light emitting means;

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- a light guide structure for guiding light from the light emitting means to a subject;
- an image-acquisition area for taking an image of the subject from the guided light;
- 5 an image-formation means for forming an image by focusing the light reflected from the image-acquisition area;
- a housing coupled to the image-formation means;
- a conversion means for converting the image formed by the image-formation means into an electric signal;
- 10 a printed circuit board on which the conversion means is fixed;
- a cover for protecting the light emitting means, the image-formation means, the housing, the conversion means, and the printed circuit board; and
- an operation means for detecting the change of the image and calculating the amount of the change using the electric signal output from the conversion means.
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9. The pointing device as defined by claim 8, wherein the subject is one selected from the group consisting of a surface of a finger, a lattice, and any perceivable pattern.

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10. The pointing device as defined by claim 8, further comprising a contact sensor for determining whether the pointing device is in use.

11. The pointing device as defined by claim 10, wherein the contact sensor is embodied by means of a direct contact or non-contact fashion.

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12. The pointing device as defined by claim 10, wherein the contact sensor controls an on-off state of the light emitting means or the conversion means based on whether the contact sensor is touched by a human body or an object.

13. The pointing device as defined by claim 10, wherein the contact sensor is positioned around the image-acquisition area within a radius of about 3 cm from the center of the image acquisition area.

14. The pointing device as defined by claim 10, wherein the contact sensor operates the pointing device only for a program requiring the pointing device.

15. The pointing device as defined by claim 10, wherein the contact sensor performs the role of a selection switch for selecting the present position or a predetermined function indicated by a pointer.

16. The pointing device as defined by claim 15, wherein the role of the selection switch is performed according to the change of time interval between contact and non-contact to the contact sensor.

17. The pointing device as defined by claim 8, wherein the light guide structure, the image-formation means, and the housing are united as an integral structure.

18. The pointing device as defined by claim 1, claim 2 or claim 8, wherein the image-acquisition area is coated in order to prevent damage or contamination of the image-acquisition area.

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19. The pointing device as defined by claim 1, claim 2 or claim 8, wherein the operation means receives the electric signal from the conversion means and determines the distance and direction for a pointer to be moved by calculating the electric signal.

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20. The pointing device as defined by claim 1, claim 2 or claim 8, wherein the image-acquisition area is a transparent member or a virtual plane positioned at a predetermined distance from the image-formation means.